

Amendments to the Claims

1. (Previously Presented) A semiconductor bridge igniter comprising:
a substrate;
an electrical bridge structure disposed on the substrate, the bridge structure comprising a bridge section and pad sections, the bridge section extending between and connecting the pad sections, each pad section being of larger area than the bridge section, the pad sections and bridge section each comprising a layer of semiconductor material on the substrate and a layer of metal disposed on the semiconductor material, the layer of metal comprising titanium and the bridge section being free of a layer of tungsten; and
a pair of electrically conductive lands each overlying a respective one of the pad sections and being spaced apart from each other to leave the bridge section exposed.
2. (Original) The semiconductor bridge igniter of claim 1 further comprising a pair of electrical leads, one connected to a respective one of the electrically conductive lands.
3. (Original) The semiconductor bridge igniter of claim 2 further including a source of electrical energy connected to each of the electrical leads to define an electrical circuit extending from one lead, to one of the electrically conductive lands, through the bridge section, thence to the other electrically conductive land and the other electrical lead.
4. (Original) The semiconductor bridge igniter of claim 3, wherein the source of electrical energy comprises a capacitor.
5. (Canceled)
6. (Previously Presented) The semiconductor bridge igniter of claim 1 wherein the substrate comprises sapphire or a silicon dioxide layer.

7. (Previously Presented) The semiconductor bridge igniter of claim 1 wherein the semiconductor material has a negative coefficient of electrical conductivity at temperatures above ambient temperature.

8. (Previously Presented) The semiconductor bridge igniter of claim 7 wherein the semiconductor material comprises polysilicon or crystalline silicon.

9. (Previously Presented) The semiconductor bridge igniter of claim 1 wherein the semiconductor material comprises undoped crystalline silicon.

10. (Canceled).

11. (Previously Presented) The semiconductor bridge igniter of claim 1 disposed in contact with an energetic material charge contained within the header of an igniter assembly.

12 – 14 (Canceled)

15. (Previously Presented) The semiconductor bridge igniter of claim 1, wherein each of the electrically conductive lands is disposed on the layer of metal comprising titanium.

16. (Previously Presented) The semiconductor bridge igniter of claim 15, wherein the electrically conductive lands comprise a metal selected from the group comprising aluminum, gold, silver, chromium, and combinations thereof.

17. (Canceled)

18. (Currently Amended) A semiconductor bridge igniter consisting essentially of:
a substrate;

~~an electrical bridge structure disposed on the substrate, the bridge structure comprising a layer of semiconductor material on the substrate, the layer of semiconductor material forming a bridge section and pad sections, the bridge section extending between and connecting the pad sections, each pad section being of larger area than the bridge section, the pad sections and bridge section each comprising a layer of semiconductor material on the substrate and a layer of metal comprising titanium on the semiconductor material;~~

~~titanium on the bridge section and pad sections; and~~

a pair of electrically conductive lands each overlying a respective one of the pad sections and being spaced apart from each other to leave the bridge section exposed.

19 - 24. (Canceled)

25 - 34. (Canceled)

35. (Previously Presented) The semiconductor bridge igniter of claim 1 wherein the semiconductor material has, at ambient temperatures, a greater resistivity than the titanium and, at an elevated temperature lower than the melting point of the titanium, a lesser resistivity than the titanium.

36. (Currently Amended) A semiconductor bridge igniter comprising:

a substrate;

an electrical bridge structure disposed on the substrate, the bridge structure comprising a bridge section and pad sections, the bridge section extending between and connecting the pad sections, each pad section being of larger area than the bridge section, the pad sections and bridge section each comprising a layer of semiconductor material on the substrate and a layer of metal disposed on the semiconductor material, the layer of metal comprising ~~consisting of~~ titanium and the bridge section being free of a layer of tungsten; and

a pair of electrically conductive lands each overlying a respective one of the pad sections and being spaced apart from each other to leave the bridge section exposed;

~~wherein the layer of metal of the bridge section consists of titanium.~~

37. (New) The igniter of claim 1 wherein the igniter has a lower input energy requirement for initiation than an identically sized semiconductor bridge igniter layer that comprises a bridge section that includes a layer of tungsten.

38. (New) The igniter of claim 1 wherein the bridge section is free of a layer of metal having a melting temperature that is higher than the vaporization temperature of the semiconductor material.

39. (New) A semiconductor bridge igniter comprising:

a substrate;

an electrical bridge structure disposed on the substrate, the bridge structure comprising a bridge section and pad sections, the bridge section extending between and connecting the pad sections, each pad section being of larger area than the bridge section, the pad sections each comprising a layer of semiconductor material on the substrate and a layer of metal on the semiconductor material, the bridge section consisting essentially of the layer of semiconductor material and a layer of titanium on the semiconductor material; and

a pair of electrically conductive lands each overlying a respective one of the pad sections and being spaced apart from each other to leave the bridge section exposed.

40. (New) A method of initiating a semiconductor bridge igniter that comprises

a substrate, an electrical bridge structure disposed on the substrate, the bridge structure comprising a bridge section and pad sections, the bridge section extending between and connecting the pad sections, each pad section being of larger area than the bridge section, the pad sections each comprising a layer of semiconductor material on the substrate and a layer of metal on the semiconductor material, the bridge section comprising the layer of semiconductor material and a layer of metal comprising titanium on the semiconductor material, and a pair of electrically conductive lands each overlying a respective one of the pad sections and being spaced apart from each other to leave the bridge section exposed, the method comprising applying an initiation signal to the conductive lands, melting the layer of metal of the bridge section and then vaporizing the semiconductor material of the bridge section.